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**Magnetic Flow
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Servicing of Ageing Flow Meters

Introduction

This bulletin assists asset owners to best manage ageing flow meters that may demonstrate long term drift in their electronics or calibration settings or noisy signal which could otherwise impact on readings. The fine tuning of meter parameters can improve performance and extend the operational life of meters.

A flow meter affected by signal noise or zero drift will typically exhibit the following symptoms, usually identified from the measurement of flows during non-flow conditions:

1. Low IR (IR readings are >100 megohms, with aging meters IR readings may decline)
2. Meter drift at zero flow (small flows may be indicated when there is no flow through meter)
3. Electrode mV readings may be seen to drift over a certain range
4. Most ageing flowmeters will operate correctly and not exhibit the above conditions.
5. Flow Meter features such as Pipe Not Full Detection, Reverse Flow detection and Low flow Cutoff are all user selectable features that can eliminate errors and improve accuracy.

The above changes in meter parameters alone do not determine the end of life for the meter. End of life of a meter is more determined when a customer deems the meter no longer meets their criteria in metering accuracy. Incidence of meter noise or drift is predominantly indicated in older sites that are not equipped with pipe-not-full detection electrodes, and can be managed via user configurable changes.

Dealing with zero drift

1. Where meter drift is indicated, determine the minimum zero flow cut-off required to remove the drift and ensure the meter read zero (mm/s)
2. Determine the normal expected maximum flow rate (m/s or mm/s)
3. Percent offset can be determined by (zero flow cut-off / max flow rate) x 100
4. Variation in maximum flow rate = maximum flow rate +/- zero flow cut-off

Example:

Zero flow cutoff required to make meter read zero = 50 mm/s (0.05m/s)

Maximum flow rate is 5 m/s (500mm/s)

Percent offset = $50\text{mm/s} / 5\text{m/s} = (0.05/5) \times 100 = 1\%$

Maximum flow rate variation due to drift = $5\text{m/s} \pm 50\text{mm/s} = 4.95 - 5.05 \text{ m/s}$

In most cases – the presence of a small amount of meter drift will be well below the allowable limits (ie well below +/- 5% in installed meter outlets) and not impact on meter performance.